

Response to Office Communication
Application No. 10/523,839
Attorney Docket No. 052077

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Listing of Claims

Claims 1-8 (Canceled)

Claim 9 (Currently amended): A method of producing a grid for a battery electrode plate comprising a step of forming a grid from a sheet by a rotary expander,

wherein said rotary expander comprises:

a disk cutter cluster comprising a pair of disk cutter rolls;

a middle disk cutter disposed in each of said disk cutter rolls;

an edge disk cutter disposed at an edge of said disk cutter cluster; [[and]]

a notch provided at the periphery of said edge disk cutter and penetrating said edge disk cutter in the thickness direction of said edge disk cutter;

a ridge disposed at the periphery of said edge disk cutter; and

an inclined surface of said edge disk cutter that contacts with said ridge at least at a part of contact with said notch, and

said notch is formed at an edge node forming part.

Response to Office Communication
Application No. 10/523,839
Attorney Docket No. 052077

Claim 10 (Currently amended): The method of producing a grid for a battery electrode plate according to Claim 9,

wherein ~~a ridge is disposed at the periphery of said edge disk cutter and~~ said ridge protrudes by 30% or greater of the thickness of said sheet from a reference plane of said disk cutter cluster.

Claim 11 (Previously presented): The method of producing a grid for a battery electrode plate according to Claim 10,

wherein said ridge protrudes by 70% or greater of the thickness of said sheet from said reference plane.

Claim 12 (Currently amended): The method of producing a grid for a battery electrode plate according to Claim 9,

wherein ~~a ridge is disposed at the periphery of said edge disk cutter and~~ the height of protrusion of said ridge from a reference plane of said disk cutter cluster is 110% or less of the thickness of said sheet.

Claim 13 (Previously presented): The method of producing a grid for a battery electrode plate according to Claim 9,

Response to Office Communication
Application No. 10/523,839
Attorney Docket No. 052077

wherein a bottom part of said notch is positioned on the side of a disk cutter roll equipped with said edge disk cutter against a reference plane of said disk cutter cluster.

Claims 14-15 (Canceled)

Claim 16 (Currently amended): A method of producing a lead-acid battery comprising a step of using a grid for a battery electrode plate, wherein
said grid is formed from a sheet by a rotary expander, [[and]]
said rotary expander comprises:
a disk cutter cluster comprising a pair of disk cutter rolls;
a middle disk cutter disposed in each of said disk cutter rolls;
an edge disk cutter disposed at an edge of said disk cutter cluster; [[and]]
a notch provided at the periphery of said edge disk cutter and penetrating said edge disk cutter in the thickness direction of said edge disk cutter;
a ridge disposed at the periphery of said edge disk cutter; and
an inclined surface of said edge disk cutter that contacts with said ridge at least at a part of contact with said notch, and
said notch is formed at an edge node forming part.

Response to Office Communication
Application No. 10/523,839
Attorney Docket No. 052077

Claim 17 (Currently amended): The method of producing a lead-acid battery according to
Claim 16,

wherein ~~a ridge is disposed at the periphery of said edge disk cutter and~~ said ridge
protrudes by 30% or greater of the thickness of said sheet from a reference plane of said disk
cutter cluster.

Claim 18 (Previously presented): The method of producing a lead-acid battery according
to Claim 17,

wherein said ridge protrudes by 70% or greater of the thickness of said sheet from said
reference plane.

Claim 19 (Currently amended): The method of producing a lead-acid battery according to
Claim 16,

wherein ~~a ridge is disposed at the periphery of said edge disk cutter and~~ the height of
protrusion of said ridge from a reference plane of said disk cutter cluster is 110% or less of the
thickness of said sheet.

Claim 20 (Previously presented): The method of producing a lead-acid battery according
to Claim 16,

Response to Office Communication
Application No. 10/523,839
Attorney Docket No. 052077

wherein a bottom part of said notch is positioned on the side of a disk cutter roll equipped with said edge disk cutter against a reference plane of said disk cutter cluster.

Claims 21-22 (Canceled)

Claim 23 (Withdrawn-currently amended): An apparatus for producing a grid for a battery electrode plate comprising:

a disk cutter cluster comprising a pair of disk cutter rolls;

a middle disk cutter disposed in each of said disk cutter rolls;

an edge disk cutter disposed at an edge of said disk cutter cluster; [[and]]

a notch provided at the periphery of said edge disk cutter and penetrating said edge disk cutter in the thickness direction of said edge disk cutter;

a ridge disposed at the periphery of said edge disk cutter; and

an inclined surface of said edge disk cutter that contacts with said ridge at least at a part of contact with said notch,

wherein said notch is formed at an edge node forming part.

Claims 24-25 (Canceled)

Response to Office Communication
Application No. 10/523,839
Attorney Docket No. 052077

Claim 26 (Withdrawn-new): The apparatus for producing a grid for a battery electrode plate according to Claim 23,

wherein said ridge protrudes by 30% or greater of the thickness of said sheet from a reference plane of said disk cutter cluster.

Claim 27 (Withdrawn-new): The apparatus for producing a grid for a battery electrode plate according to Claim 26,

wherein said ridge protrudes by 70% or greater of the thickness of said sheet from said reference plane.

Claim 28 (Withdrawn-new): The apparatus for producing a grid for a battery electrode plate according to Claim 23,

wherein the height of protrusion of said ridge from a reference plane of said disk cutter cluster is 110% or less of the thickness of said sheet.

Claim 29 (Withdrawn-new): The apparatus for producing a grid for a battery electrode plate according to Claim 23,

wherein a bottom part of said notch is positioned on the side of a disk cutter roll equipped with said edge disk cutter against a reference plane of said disk cutter cluster.